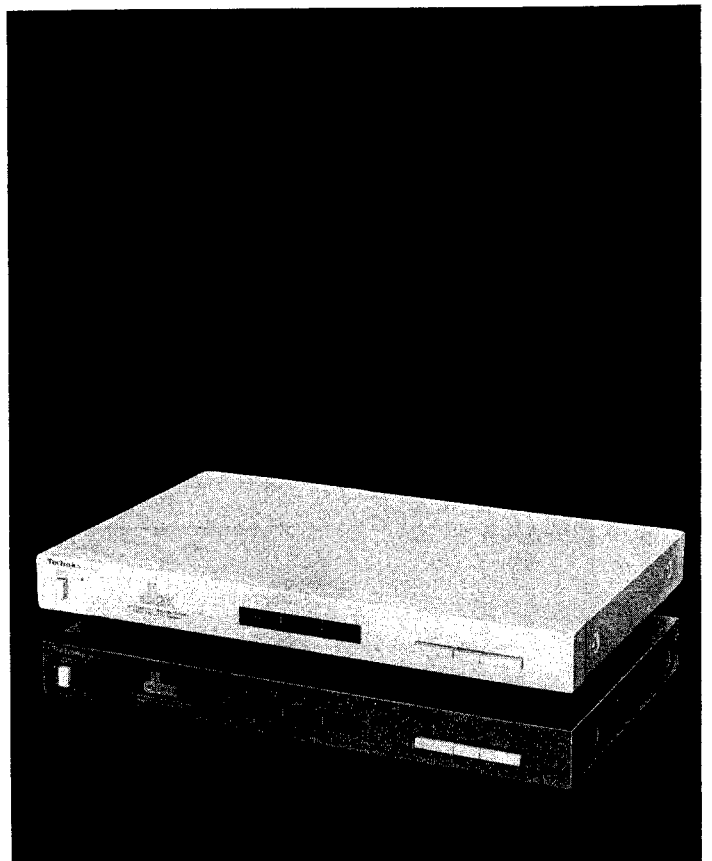


# Technics

dbx NOISE REDUCTION UNIT

RP-9024

OPERATING INSTRUCTIONS



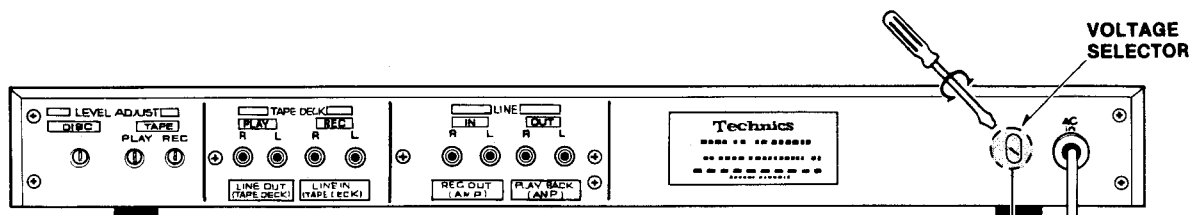
Before operating this set, please read these instructions completely.

# 1

- VOLTAGE ADJUSTMENT
- INSTÄLLNING AV SPÄNNING
- REGLAGE DU VOLTAGE

- INSTELLING VAN DE NETSPANNING
- INDSTILLING AF SPÆNDINGEN
- EINSTELLEN DER SPANNUNG

- REGOLAZIONE DEL VOLTAGGIO
- AJUSTE DE LA TENSION
- 電壓之調整



Preset power voltage 240V

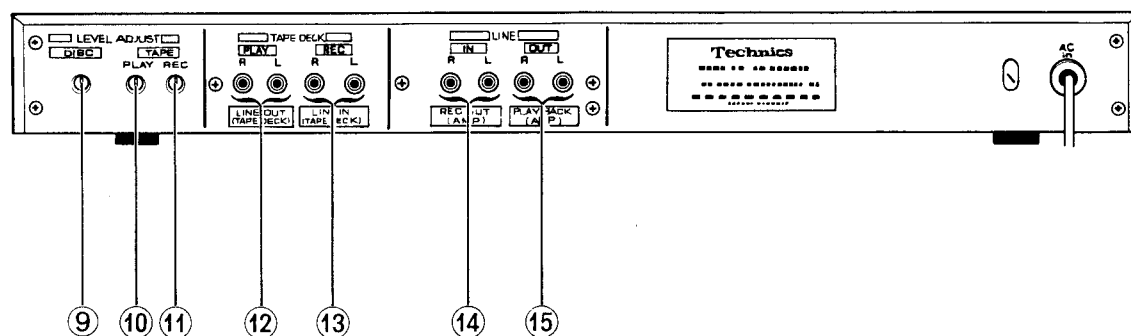
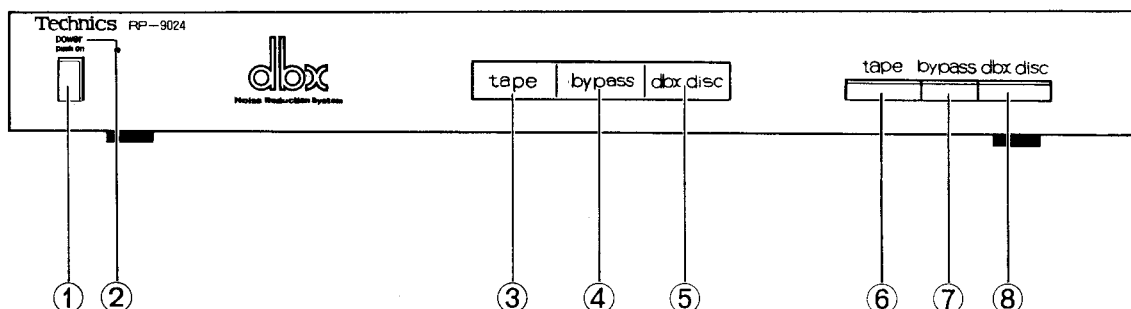
|  |   |   |   |   |
|--|---|---|---|---|
| <ul style="list-style-type: none"> <li>• SETTING OF VOLTAGE SELECTOR</li> <li>• INSTÄLLNING AV SPÄNNINGSVÄLJAREN</li> <li>• REGLAGE DU SELECTEUR DE VOLTAGE</li> <li>• STAND VAN DE NETSPANNINGS SELEKTOR</li> <li>• SPÆNDINGSVÆLGERENS STILLING</li> <li>• EINSTELLUNG DES SPANNUNGSWÄHLERS</li> <li>• REGOLAZIONE DEL SELETTORE DEL VOLTAGGIO</li> <li>• AJUSTE DEL SELECTOR DE VOLTAJE</li> <li>• 電壓選擇器之調定狀態</li> </ul> | <br>110V                                | <br>125V  | <br>220V                                | <br>240V  |
| <ul style="list-style-type: none"> <li>• LOCAL VOLTAGE</li> <li>• LOKAL SPÄNNING</li> <li>• TENSION LOCALE</li> <li>• PLAATSELIJKE NETSPANNING</li> <li>• DEN STEDLIGE NETSPÆNDING</li> <li>• ÖRTL NETSPANNUNG</li> <li>• TENSIONE LOCALE</li> <li>• VOLTAJE LOCAL</li> <li>• 本地之電壓</li> </ul>   | AC: 100,<br>105,<br>110V<br><br>50-60Hz | AC: 115,<br>117,<br>120,<br>125V<br><br>50-60Hz | AC: 200,<br>210,<br>220V<br><br>50-60Hz | AC: 225,<br>230,<br>240,<br>250V<br><br>50-60Hz |

# 2

- CONTROLS
- KONTROLLER
- LES COMMANDES

- BEDIENINGSKNOPPEN
- BETJENING
- BEDIENUNGSELEMENTE

- CONTROLLO
- CONTROLES
- 各個操控制之代號



\*The term dbx is a registered trademark of dbx Inc.

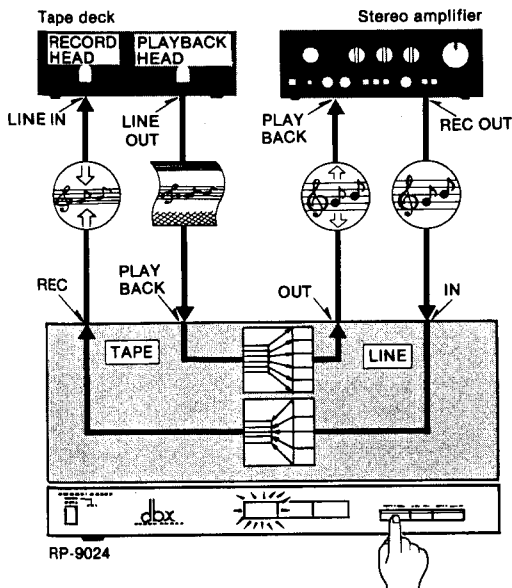
# 3

- PATHS OF SIGNALS
- SÅ HÄR GÅR SIGNALERNA
- TRAJETS DES SIGNAUX

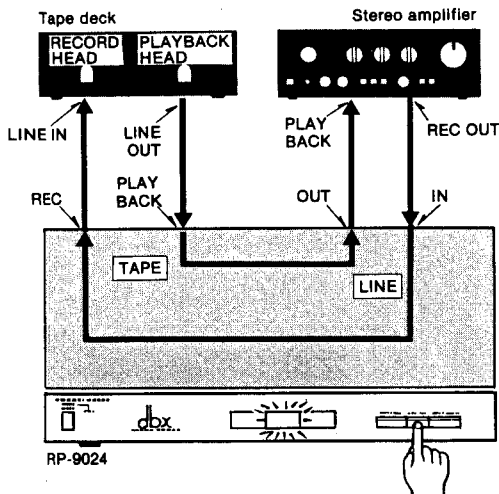
- SIGNAALLOOP
- SIGNALBEHANDLING
- WEGE DER SIGNALE

- PERCORSI DEL SEGNALE
- PASOS DE SENALES
- 信號之流程

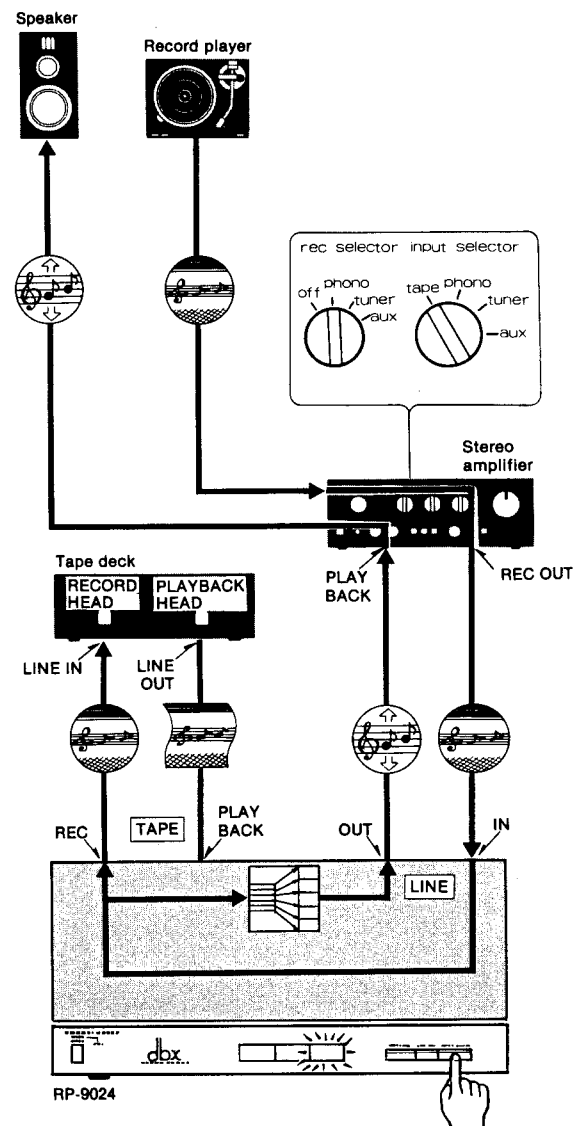
## ■ "tape" mode



## ■ "bypass" mode



## ■ "dbx disc" mode



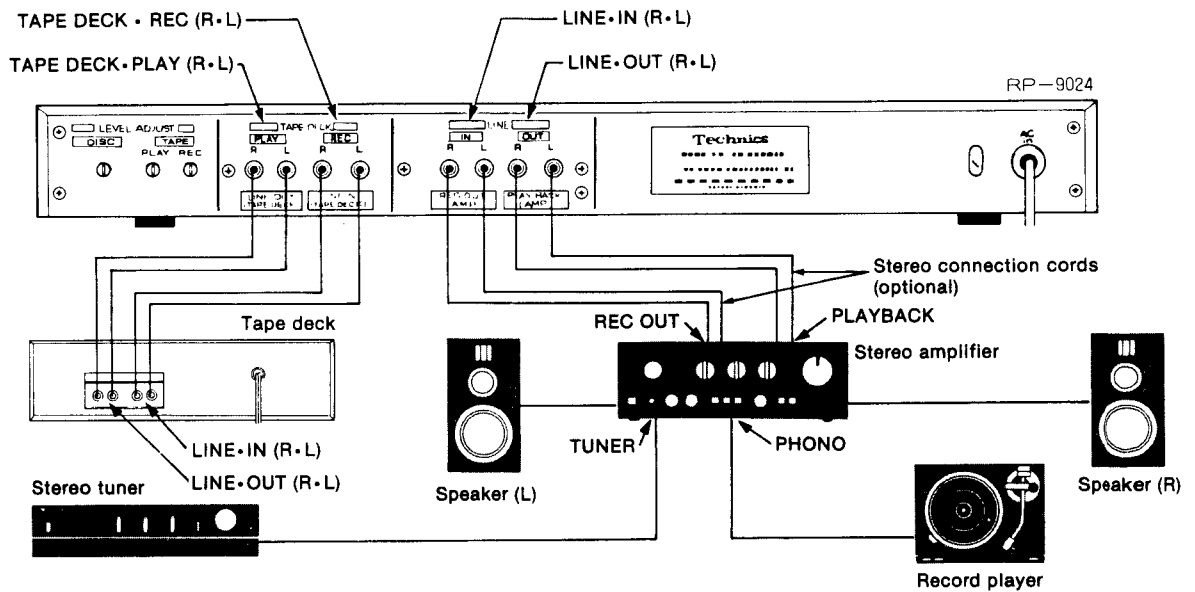
|  |  |   |  |  |  |   |  |
|--|--|---|--|--|--|---|--|
| <ul style="list-style-type: none"> <li>• Original signal</li> <li>• Ursprungssignal</li> <li>• Signal d'origine</li> <li>• Oorspronkelijk Signaal</li> </ul> | <ul style="list-style-type: none"> <li>• Originalit signal</li> <li>• Ursprüngliches Signal</li> <li>• Segnale originale</li> <li>• Señal original</li> <li>• 原來的信號</li> </ul> | <ul style="list-style-type: none"> <li>• Saturation</li> <li>• Mättnad</li> <li>• Saturazione</li> <li>• Verzadiging</li> <li>• Overstyering</li> </ul>   | <ul style="list-style-type: none"> <li>• Sättigung</li> <li>• Saturazione</li> <li>• Saturación</li> <li>• 飽和</li> </ul>   | <ul style="list-style-type: none"> <li>• Noise</li> <li>• Brus</li> <li>• Bruit</li> <li>• Ruis</li> <li>• Støj</li> </ul>   | <ul style="list-style-type: none"> <li>• Störgeräusche</li> <li>• Rumore</li> <li>• Ruido</li> <li>• 噪聲</li> </ul> | <ul style="list-style-type: none"> <li>• Decoder</li> <li>• Avkodare</li> <li>• Décodeur</li> <li>• Dekodeerorgaan</li> </ul> | <ul style="list-style-type: none"> <li>• Dekoder</li> <li>• Decodierer</li> <li>• Decodificatore</li> <li>• Descodificador</li> <li>• 譯碼器</li> </ul> |
| <ul style="list-style-type: none"> <li>• Encoder</li> <li>• Kodare</li> <li>• Codeur</li> <li>• Kodeerorgaan</li> </ul>                                      | <ul style="list-style-type: none"> <li>• Kodier</li> <li>• Codiereinrichtung</li> <li>• Codificatore</li> <li>• Codificatore</li> <li>• 編碼器</li> </ul>                         | <ul style="list-style-type: none"> <li>• Encoded tape</li> <li>• Kodat band</li> <li>• Bande codée</li> <li>• Gekodeerde tape</li> <li>• Kodet bånd</li> <li>• Codiertes Band</li> <li>• Nastro codificato</li> <li>• Cinta codificada</li> <li>• 經編碼的磁帶</li> </ul> | <ul style="list-style-type: none"> <li>• Encoded disc</li> <li>• Kodad skiva</li> <li>• Disque codé</li> <li>• Gekodeerde plaat</li> <li>• Kodet plade</li> <li>• Codierte Schallplatte</li> <li>• Disco codificato</li> <li>• Disco codificado</li> <li>• 經編碼的唱片</li> </ul> | <ul style="list-style-type: none"> <li>• Signal returned to original form</li> <li>• Signalen tillbaka till ursprunglig form</li> <li>• Signal rétabli sous sa forme d'origine</li> <li>• Het oorspronkelijke signaal is hersteld</li> <li>• Signalet er genskabt i sin originale form</li> <li>• Das in den ursprünglichen Zustand zurückversetzte Signal</li> <li>• Segnale ristabilito nella forma originale</li> <li>• Señal vuelta a su forma original</li> <li>• 復原信號</li> </ul> |  |   |  |

# 4

- CONNECTIONS
- ANSLUTNINGAR
- BRANCHEMENTS

- AANSLUITINGEN
- TILSLUTNING
- ANSCHLÜSSE

- CONNESSIONI
- CONEXIONES
- 連接



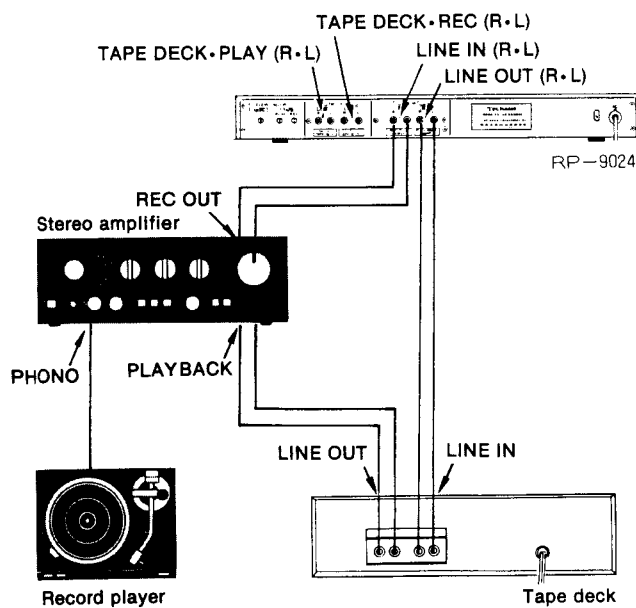
# 5

- MORE ADVANCED APPLICATIONS
- FLERA SÄTT ATT ANVÄNDA RP-9024
- APPLICATIONS PLUS ELABOREES

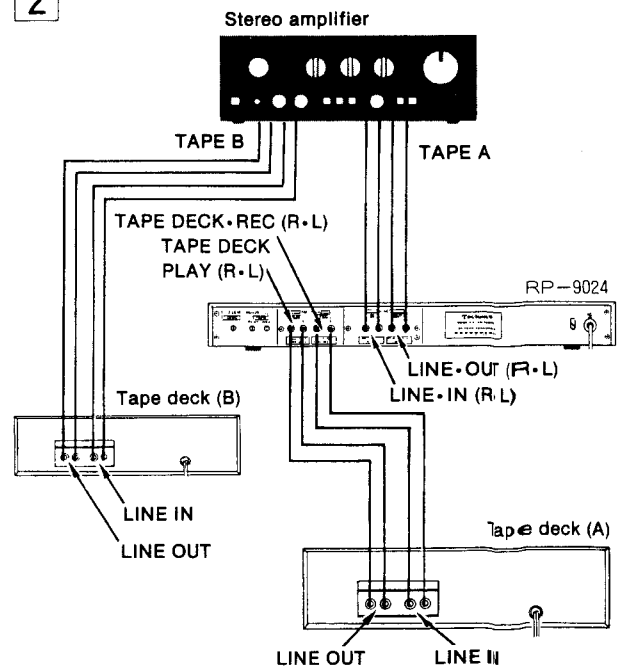
- GEAVANCEERDE TOEPASSINGEN
- FLERE MULIGHEDER
- WEITERE ANWENDUNGSMÖGLICHKEITEN

- APPLICAZIONI PIU AVANZATE
- APLICACIONES MAS AVANZADAS
- 發展性的使用方法

1



2



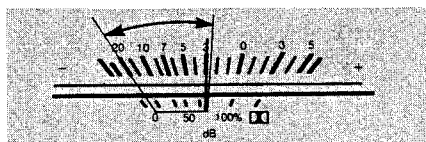
# 6

- LEVEL ADJUSTMENT
- NIVÅINSTALLNING
- REGLAGE DU NIVEAU

- REGELING VAN HET NIVEAU
- NIVEAUREGULERING
- PEGELEINSTELLUNGEN

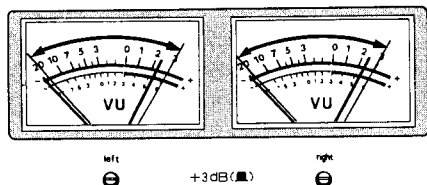
- REGOLAZIONE DEL LIVELLO
- AJUSTE DE NIVEL
- 電平之調整

1



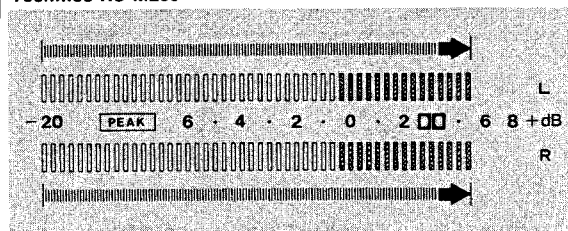
2

Technics RS-1500U



3

Technics RS-M280



# 7

- dbx NOISE REDUCTION SYSTEM
- dbx BRUSREDUCERINGSSYSTEM
- DISPOSITIF REDUCTEUR DE BRUIT dbx

- dbx-RUISONDERDRUKKINGS-SYSTEM
- dbx STØJREDUKTIONSSYSTEM
- dbx RAUSCHVERMINDERUNGS-SYSTEM

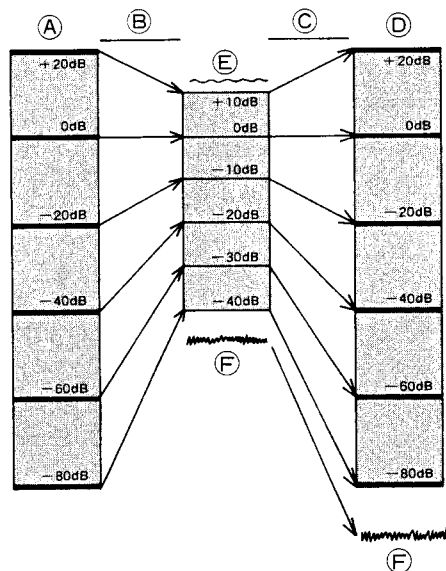
- SISTEMA dbx DI RIDUZIONE DEL RUMORE
- EL SISTEMA DE REDUCCION DE RUIDOS dbx SIRVE PARA REDUCIR
- dbx減噪系統簡介

1

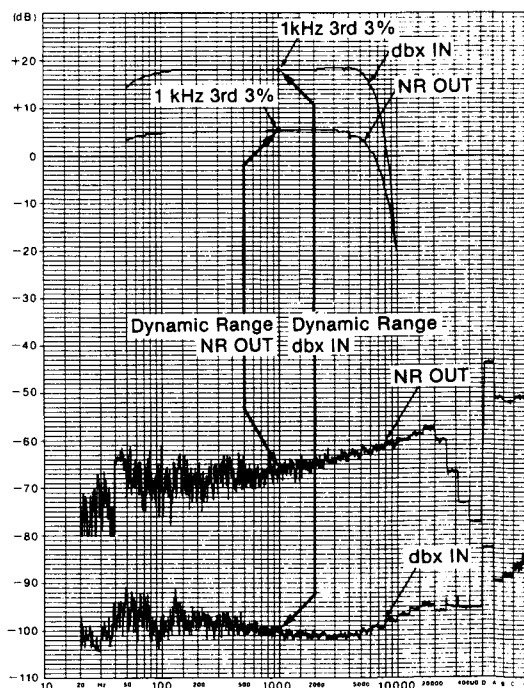
- Encoding/decoding process
- Kodnings/avkodnings-process
- Processus d'encodage/décodage
- Coderen/decoderen proces
- Encoding/decoding process
- Codier-/Decodierprozeß
- Procedimento di codificazione/decifrazione
- Codificación/Descodificación
- 編・譯碼程序

2

- Data from combination with cassette deck
- Prestanda tillsammans med kassettdäck
- Valeurs de combinaison avec un magnétocassette
- Gegevens betreffende de combinatie met een cassettedeck
- Tekniske data for kassettebåndoptager med dbx
- Daten von der Kombination mit einem Cassettengerät
- Dati dalla combinazione col registratore a cassette
- Datos de combinación con un magnetófono
- 和卡式錄音座配合起來時的數據



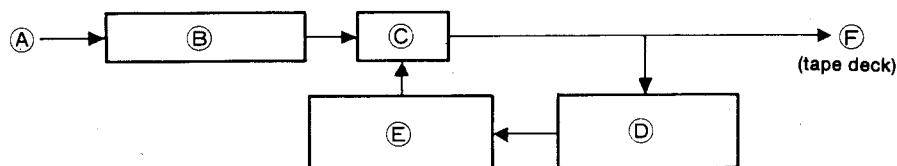
|     |  |  |  |
|-----|--|--|--|
| (A) | • Input<br>• Ingång<br>• Entrée  | • Ingang<br>• Indgang<br>• Eingang   | • Ingressore<br>• Entrada<br>• 輸入  |
| (B) | • Encoding<br>• Kodning<br>• Encodage  | • Coderen<br>• Kodning<br>• Codieren   | • Codificazione<br>• Codificación<br>• 編碼  |
| (C) | • Decoding<br>• Avkodning<br>• Décodage  | • Decoderen<br>• Dekodning<br>• Decodieren   | • Decifrazione<br>• Descodificación<br>• 譯碼  |
| (D) | • Output<br>• Utgång<br>• Sortie   | • Udgang<br>• Udgang<br>• Ausgang  | • Uscita<br>• Salida<br>• 輸出   |
| (E) | • Tape saturation level<br>• Båndmättningsnivå<br>• Niveau des saturation de bande | • Verzadigingsniveau van band<br>• Båndets mætningsniveau<br>• Bandsättigungs-niveau | • Livello di saturazione del nastro<br>• Nivel de saturación da la cinta<br>• 磁帶飽和電平 |
| (F) | • Tape hiss<br>• Bandbrus<br>• Souffle de bande                                    | • Bandruis<br>• Båndsus<br>• Bandrauschen  | • Fruscio del nastro<br>• Siseo de la cinta<br>• 磁帶嘶聲                                |



- 3**
- Encoder
  - Kodare
  - Partie de codage

- Kodeerorgaan
- Koder
- Codiereinrichtung

- Codificatore
- Codificador
- 編碼器

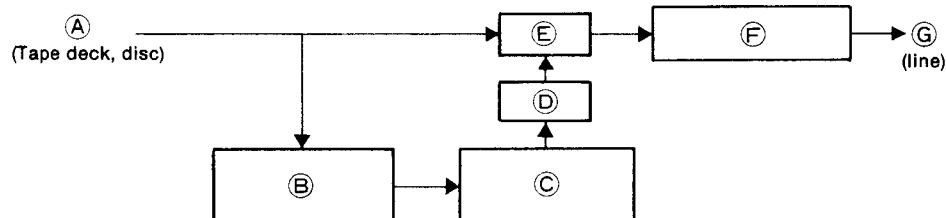


|  |  |  |  |   |  |
|--|--|--|--|---|--|
| <b>A</b> <ul style="list-style-type: none"> <li>• Input</li> <li>• Insignal</li> <li>• Entrée</li> </ul>                         | <ul style="list-style-type: none"> <li>• Ingangssignaal</li> <li>• Indgang</li> <li>• Eingang</li> </ul>             | <ul style="list-style-type: none"> <li>• Ingresso</li> <li>• Entrada</li> <li>• 輸入</li> </ul>            | <b>D</b> <ul style="list-style-type: none"> <li>• Weighting network</li> <li>• Spanningsstyrd förstärkare</li> <li>• Réseau depondération</li> </ul> | <ul style="list-style-type: none"> <li>• Gewogen network</li> <li>• Filter</li> <li>• Bewertungsnetzwerk</li> </ul>             | <ul style="list-style-type: none"> <li>• Rete di carica</li> <li>• Red ponderada</li> <li>• 衡重網路</li> </ul>                    |
| <b>B</b> <ul style="list-style-type: none"> <li>• Pre-emphasis</li> <li>• Diskant-höjning</li> <li>• Pré-accentuation</li> </ul> | <ul style="list-style-type: none"> <li>• Voor-versterking</li> <li>• Forbetoning</li> <li>• Vorverzerrung</li> </ul> | <ul style="list-style-type: none"> <li>• Preenfasi</li> <li>• Preacentuación</li> <li>• 預加重電路</li> </ul> | <b>E</b> <ul style="list-style-type: none"> <li>• RMS level sensor</li> <li>• RMS detektor</li> <li>• Détecteur de niveau efficace</li> </ul>        | <ul style="list-style-type: none"> <li>• RMS-niveau sensor</li> <li>• RMS niveau-detektor</li> <li>• RMS-pegelsensor</li> </ul> | <ul style="list-style-type: none"> <li>• Sensore del livello RMS</li> <li>• Sensor de nivel RMS</li> <li>• 有效值電平探測器</li> </ul> |
| <b>C</b> <b>VCA (Voltage Controlled Amplifier)</b>   |  |  | <b>F</b> <ul style="list-style-type: none"> <li>• Output</li> <li>• Utsignal</li> <li>• Sortie</li> </ul>  |   |  |

- Decoder
- Avkodare
- Partie de décodage

- Dekodeerorgaan
- Dekoder
- Decodierer

- Decodificatore
- Descodificador
- 譯碼器



|   |   |   |   |  |   |
|---|---|---|---|--|---|
| <b>A</b> <ul style="list-style-type: none"> <li>• Input</li> <li>• Insignal</li> <li>• Entrée</li> </ul>  | <ul style="list-style-type: none"> <li>• Ingangssignaal</li> <li>• Indgang</li> <li>• Eingang</li> </ul>            | <ul style="list-style-type: none"> <li>• Ingresso</li> <li>• Entrada</li> <li>• 輸入</li> </ul>               | <b>D</b> <b>X (-1)</b>  |  |   |
| <b>B</b> <ul style="list-style-type: none"> <li>• Weighting network</li> <li>• Spanningsstyrd förstärkare</li> <li>• Réseau de pondération</li> </ul> | <ul style="list-style-type: none"> <li>• Gewogen network</li> <li>• Filter</li> <li>• Bewertungsnetzwerk</li> </ul> | <ul style="list-style-type: none"> <li>• Rete di carica</li> <li>• Red ponderada</li> <li>• 衡重網路</li> </ul> | <b>E</b> <b>VCA (Voltage Controlled Amplifier)</b>  |  |   |
| <b>C</b> <ul style="list-style-type: none"> <li>• RMS level sensor</li> <li>• RMS detektor</li> <li>• Détecteur de niveau efficace (RMS)</li> </ul>   |   |   | <b>F</b> <ul style="list-style-type: none"> <li>• De-emphasis</li> <li>• Diskant-sänkning</li> <li>• Atténuation</li> </ul> | <ul style="list-style-type: none"> <li>• Verzwakking</li> <li>• Efterbetoning</li> <li>• Rückentzerrung</li> </ul> | <ul style="list-style-type: none"> <li>• Deenfasi</li> <li>• Desacentuación</li> <li>• 去加重電路</li> </ul> |
|   |   |   | <b>G</b> <ul style="list-style-type: none"> <li>• Output</li> <li>• Utsignal</li> <li>• Sortie</li> </ul>                   | <ul style="list-style-type: none"> <li>• Uitgangssignaal</li> <li>• Udgang</li> <li>• Ausgang</li> </ul>           | <ul style="list-style-type: none"> <li>• Uscita</li> <li>• Salida</li> <li>• 輸出</li> </ul>              |

## (ENGLISH)

We want to thank you for selecting the model RP-9024 Technics dbx NOISE REDUCTION UNIT. To obtain the maximum benefit of the many features of this unit, please carefully read these operating instructions.

## FEATURES

1. "dbx" noise reduction system
  - This system exhibits a noise reduction effect of more than about 30 dB across the entire audible frequency spectrum.
  - The linear logarithmic compression-expansion safeguards against changes in the sound quality due to level deviations.
  - The sound signals are compressed and recorded at a high recording level which makes it possible to greatly improve the dynamic range.
2. 3-head deck compatible type which allows dbx playback simultaneously with dbx recording.
3. dbx disc position for enjoying the sound from dbx records (dbx-encoded discs\*).
4. Bypass position also provided.
5. One-touch buttons for simple operation.
6. Slim design.
  - \* With ordinary records, the encoded and recorded signals can be restored to their original form (decoded) immediately before cutting and the resulting signals can be cut onto the records but all the noise inherent to the record (such as that produced by scratches, etc.) can in no way be avoided. In contrast, with dbx-encoded discs, the signals are cut onto the records in encoded form. As a result, there is hardly any audible noise including that from the record itself and the dynamic range is expanded for a really wonderful effect.

## CONTROLS (Refer to fig. 2.)

- ① **Power switch [power (push on)]**
- ② **Power lamp**  
Lights when Power switch is depressed.
- ③ **Tape lamp [tape]**  
Lights up green when Tape button is depressed.
- ④ **Bypass lamp [bypass]**  
Lights up yellow when Bypass button is depressed.
- ⑤ **dbx disc lamp [dbx disc]**  
Lights up red when dbx disc button is depressed.
- ⑥ **Tape button [tape]**  
Depress this when playing back (decoding) a dbx-recorded tape or when recording (encoding).
- ⑦ **Bypass button [bypass]**  
Depress this when recording or playing back without the dbx system.
- ⑧ **dbx disc button [dbx disc]**  
Depress this when playing back (decoding) a dbx-encoded disc.
- ⑨ **Disc play level adjustor [LEVEL ADJUST • DISC]**  
This adjusts the playback level of a dbx-encoded disc.

- ⑩ **Tape playback level adjustor [LEVEL ADJUST • TAPE PLAY]**  
This adjusts the playback level of the dbx-recorded tape.
- ⑪ **Tape recording level adjustor [LEVEL ADJUST • TAPE REC]**  
This adjusts the recording level of the dbx-encoded tape.
- ⑫ **Tape playback jacks [TAPE DECK • PLAY (R • L)]**  
Connect the pin cord from the tape deck's LINE OUT (playback) jacks.
- ⑬ **Tape recording jacks [TAPE DECK • REC (R • L)]**  
Connect the pin cord to the tape deck's LINE IN (recording) jacks.
- ⑭ **Line input jacks [LINE IN (R • L)]**  
Connect the pin cord from the amplifier's REC OUT jacks.
- ⑮ **Line output jacks [LINE OUT (R • L)]**  
Connect the pin cord to the amplifier's PLAYBACK jacks.

## CONNECTIONS (Refer to fig. 4.)

Connect the RP-9024 to the amplifier and cassette deck as shown in the figure.

## Operation

The following four operational modes can be selected in a one-touch action:

- For dbx playback, depress the Tape button.
- For dbx recording, depress the Tape button.
- For playing back dbx-encoded discs, depress the dbx disc button.
- For neither dbx recording nor dbx playback, depress the Bypass button.

### ■ dbx Playback

- ① Depress the Tape button.
- ② Set the amplifier's input selector to the tape position. (If the amplifier features a tape monitor switching function, set its tape monitor switch to the tape position.)
- ③ Load the dbx-recorded tape into the tape deck and play.
- ④ Set the volume to the suitable level using the amplifier's volume control.
- \* Keep the tape deck's Dolby NR switch at the "out" ("off") position.

### ■ dbx Recording

- ① Depress the Tape button.
- ② Play the source (FM broadcast, record, etc.) which is to be recorded.
- ③ Set the tape deck to the recording standby mode and adjust the recording level.  
Refer to the deck's operating instructions for details on adjusting the recording level.  
Remember when adjusting the recording level that it should be adjusted 2 or 3 dB lower than usual since encoded signals are being supplied.  
Refer to the "Level Adjustments" on page 8 for ordinary cassette decks.
- \* Keep the tape deck's Dolby NR switch at the "out" ("off") position.

### ■ Playing Back dbx-Encoded Discs

- ① Depress the dbx disc button.
- ② Set the amplifier's input selector to the tape position and the recording selector to the phono position.  
(If the amplifier features a tape monitor switching function, set its tape monitor switch to the tape position and its input selector to the phono position.)
- ③ Place the dbx-encoded disc on the turntable.  
\* Adjust the volume with the amplifier's volume control. The tape deck's volume, power and other controls have no effect.

### ■ dbx Recording onto Tape While Playing dbx-Encoded Disc

- ① Play the dbx-encoded disc (see previous section).
- ② Set the tape deck to the recording standby mode and adjust the recording level (refer to step (3) in "dbx Recording").
- ③ When the pause is released, recording begins.

### ■ Ordinary Recording/Playback Without dbx Circuits

- Simply keep the Bypass button depressed and the signals will pass through the unit regardless of the Power switch position, making ordinary recording and playback possible.

#### Caution

- Turn down the amplifier's volume before proceeding to operate. If a program source which is not encoded is allowed to pass through the dbx encoder and played without the volume having been turned down in advance, an abnormally loud sound may be heard as a result.
- Two or more function buttons cannot be depressed at the same time. Do not force them since this may lead to a malfunction or damage.
- Humming can be heard if this unit is placed on top of a stereo amplifier or tuner or even placed alongside. This noise is generated by the effects of the magnetic flux leaking from the stereo amplifier's power transformer. In such cases, change the installation positions of the unit and stereo amplifier and install where the effects are minimal.  
(Usually, Placing the unit at a distance equivalent to the height of the stereo amplifier is sufficient to make it immune to the effects.)
- During dbx recording and playback the tape deck's headphones output is encoded so that the sound from headphones connected to the tape deck is unnatural.

## MORE ADVANCED APPLICATIONS

(Refer to fig. 5 ①, ②.)

### ■ Decoding dbx-Encoded Disc for Recording (① one example of connections)

- ① Depress the dbx disc button.
- ② Set the tape deck to the recording standby mode and adjust the recording level.
- ③ Release the pause to start the recording.

### ■ Decoding dbx-Encoded Tape for Recording (② one example of connections)

When the amplifier can accommodate two cassette decks and features an (A) — (B) dubbing switch:

- ① Depress the Tape button.
- ② Load the dbx-encoded tape into tape deck (A) and set it to the playback mode; load the blank tape into tape deck (B) and set it to the recording mode.
- ③ Adjust the recording level and start recording.

## LEVEL ADJUSTMENT

(Refer to fig. 6 ①, ②, ③.)

This unit's level is adjusted so that it is optimally aligned with the levels of the tape deck and amplifier.

Make the following adjustments with an ordinary screwdriver so that the recording/playback level of the signals passing through the unit is virtually identical to the average level of the signals which do not pass through the unit.

These level adjustments are not regulated for dbx encoding and decoding operations and so, even if there is some slight deviation, this will not be sufficient to impair operation.

### ■ Tape Recording Level

- ① Supply the signals from the FM tuner or record player (used as the program source).
- ② Depress the Bypass button.
- ③ Set the tape deck to the recording standby mode, and adjust the recording level with the input level adjustment knob.
  - Adjust so that the maximum deflection is around "−3 dB" in the case of a VU meter or level meter (①).
  - Adjust so that the maximum deflection is "0" ~ "+3 dB" in the case of a VU meter on an open-reel deck (② Technics RS-1500U). The VU meters on the RS-1500U use a double scale. See the operating instructions for details.
  - Adjust so that the peak is around "+5 dB" in the case of a fluorescent meter (③ Technics RS-M280).
- ④ Depress the Tape button and use the rear panel tape recording level adjuster to set the volume and meter indication to the same value as when the signals are allowed to pass through the unit.

This completes the adjustment of the tape recording level. Recording may now start. Proceed with dbx recording for several minutes and use this tape to adjust the tape playback level.



## ■ Tape Playback Level

- ① Depress the Bypass button.
- ② Set the amplifier's input selector to the tape position.  
If the amplifier has a tape monitor switching function, set the amplifier's tape monitor switch to the tape position.
- ③ Play back the dbx-recorded tape which has just been recorded.
- ④ Depress the Tape button and use the rear panel tape playback level adjustor to set the amplifier's volume and meter indication to the same value as when the signals are allowed to pass through the unit.

This completes the adjustment of the tape playback level.

## ■ Disc Play Level

- ① Set the amplifier's input selector to the phono position.  
If the amplifier has a tape monitor switching function, set the amplifier's tape monitor switch to source and its input selector to the phono position.
- ② Play the dbx-encoded disc.  
The disc's encoded sound is heard directly.
- ③ Set the amplifier's input selector to the tape position.  
If the amplifier has a tape monitor switching function, set its tape monitor switch to the tape position.
- ④ Depress the dbx disc button and use the rear panel disc play level adjustor to set the amplifier's volume and meter indication to the same value as when the source sound was heard.

## dbx NOISE REDUCTION SYSTEM

(Refer to fig. 7 ①, ②, ③.)

The dbx Noise reduction system serves to greatly reduce the noise generated during recording and playback across the whole audible frequency spectrum (reduction by more than about 30dB) and also to improve the linearity at high input levels.

As a result, both recording and playback can be performed without impairing the wide dynamic range of the original sound.

### Features

1. Reduced noise over the whole audible frequency range (more than about 30dB reduction).
2. The signal is compressed at a high recording level for recording to enable recording with minimal distortion and a wide dynamic range.
3. The linear logarithmic compression and expansion do not make the sound quality undergo change with level mismatching.

## Principle of basic operation

The dbx system works to expand the dynamic range by compressing (encoding) the signals and then expanding (decoding) them. As shown in the figure, the input signal level is halved during recording onto the tape. During playback the halved level is doubled to restore the original signal. The figure shows that high signals are greatly expanded (from "+ 10 dB" to "+ 20 dB") while low signals are given a low expansion ("-40dB" to "-80dB"). This results in a great improvement in the dynamic range and simultaneously in a great reduction in tape hiss.

## Expansion in Dynamic Range

The figure shows the dynamic range characteristics. First the overall frequency response is indicated at a signal level where the distortion is made 3% at 1 kHz.

When the "dbx in" position is selected, there is an increase of about 13dB at the 3% point over the "out" position, indicating that the distortion with high input levels is greatly improved.

In addition, the noise distribution is indicated at the "dbx in/out" positions when the noise level is recorded without any signals being supplied and that noise on the tape is played back. With recording and playback at the "dbx in" position, it is clear that the noise level is greatly reduced.

Because of the great reduction in the noise level and the great expansion in the signal level, a dynamic range at the "dbx in" position is vastly improved, and a dynamic range which is vastly superior to that of a 2-track 38cm/sec. openreel tape is yielded.

## Basic Circuit Configuration

The dbx system consists of an encoder (square root amplifier) which compresses the dynamic range into half the number of decibels and a decoder (square amplifier) which expands this range to double the number of decibels.

### ■ Encoder

The input signals pass through the pre-emphasis circuit (high-pass boosting filter) and are supplied to the VCA (DC voltage-controlled amplifier).

Part of the VCA output is sent to the RMS level sensor via the weighting network and a DC voltage is produced in accordance with the strength of the signals. The amplification of the VCA varies in accordance with the strength of this DC voltage and the dynamic range of the input signals is compressed to half the original number of decibels.

### ■ Decoder

When the recording/playback signals enter the decoder, part of the signal is sent to the RMS level sensor via the weighting network, the output is made a DC voltage with a symbol which is the reverse of that of the encode, and the VCA amplification is controlled. The dynamic range of the input signals is increased to double the original number of decibels and the signals are fed out via the deemphasis circuit.

## (SVENSKA)

Vi tackar Er för att Ni valt Technics brusreduceringssystem RP-9024.

Läs noga igenom denna bruksanvisning för att dra maximal nytta från denna apparat och dess många egenskaper.

### EGENSKAPER

- ① dbx brusreduceringssystem.
    - Stördämpning med mer än 30dB över hela det hörbara frekvensområdet.
    - Den linjärt logaritmiska kompressionen och expansionen gör att ljudkvaliteten inte ändras om ut/innivåerna skulle vara olika.
    - Ljudsignalerna komprimeras och inspelas vid hög nivå vilket medför avsevärt förbättrat dynamikomfång.
  - ② Anslutning till kassettdäck med tre bandhuvuden tillåter dbx-avspelning samtidigt med dbx-inspelning.
  - ③ "dbx disc"-läge för avspelning av dbx-kodade skivor.\*
    - \* dbx-kodade skivor skiljer sig från vanliga grammfonskivor genom att signalerna pressas in i skivspåret i kodad form.
- Under avspelningen passerar signalerna genom en avkodare som återställer dem till den ursprungliga formen. Ljudet blir praktiskt taget fritt från störningar och dynamikomfånget avsevärt breddat.

### KONTROLLER (Fig. 2)

- ① Strömbrytare [power (push on)]
- ② Spänningsindikator  
Tänds när "tape"-knappen trycks.
- ③ Bandindikator [tape]  
Tänds när "tape"-knappen trycks.
- ④ "Genomgångs"-indikator [bypass]  
Tänds när "bypass"-knappen trycks.
- ⑤ "dbx disc"-indikator [dbx disc]  
Tänds när "dbx-disc"-knappen trycks.
- ⑥ "Tape"-knapp [tape]  
Tryck denna vid avspelning (avkodning) av ett dbx-inspelat band eller vid inspelning (kodning).
- ⑦ "Bypass"-knapp [bypass]  
Tryck denna vid inspelning eller avspelning utan dbx-systemet.
- ⑧ "dbx-disc"-knapp [dbx disc]  
Tryck denna vid avspelning (avkodning) av en dbx-kodad skiva.
- ⑨ Nivåkontroll för skiva [LEVEL ADJUST • DISC]  
För reglering av avspelningsnivån från en dbx-kodad skiva.

- ⑩ Nivåkontroll för band [LEVEL ADJUST • TAPE PLAY]  
För reglering av avspelningsnivån från ett dbx-inspelat band.
- ⑪ Inspelningsnivåkontroll [LEVEL ADJUST • TAPE REC]  
För reglering av inspelningsnivån på dbx-inspelat band.
- ⑫ Avspelningsingångar [TAPE DECK • PLAY (R • L)]  
Ansluts till linjeutgångarna (LINE OUT) på kassettdäcket.
- ⑬ Inspelningsutgångar [TAPE DEC • REC (R • L)]  
Ansluts till linjeingångarna (LINE IN) på kassettdäcket.
- ⑭ Linjeingångar [LINE IN (R • L)]  
Ansluts till förstärkaren (REC OUT).
- ⑮ Linjeutgångar [LINE OUT (R • L)]  
Ansluts till förstärkaren (PLAYBACK).

### ANSLUTNINGAR (Fig. 4)

Anslut RP-9024 till förstärkare och kassettdäck enligt figuren.

### Manövrering

Endast en knapp behöver tryckas för vardera av följande funktioner.

- dbx avspelning: tryck "tape"-knappen.
- dbx inspelning: tryck "tape"-knappen.
- Spelning av dbx-kodade skivor: tryck "dbx disc"-knappen.
- Varken dbx inspelning eller dbx avspelning: tryck "bypass"-knappen.

#### ■ dbx avspelning

- ① Tryck "Tape"-knappen.
- ② Sätt förstärkarens ingångsväljare på "tape", resp. ev. tape monitor omkopplare på "tape".
- ③ Lägg in den dbx-inspelade kassetten i kassettdäcket och starta avspelning.
- ④ Reglera volymen med förstärkarens volymkontroll.
  - \* Kassettdäckets Dolby NR-omkopplare i läge "o ut" ("off").

#### ■ dbx inspelning

- ① Tryck "tape"-knappen.
- ② Starta den programkälla som ska inspelas (FM radio, skiva, etc.).
- ③ Gör kassettdäcket klart för inspelning och ställ in inspelningsnivån, vilken bör vara 2—3dB lägre än vid normal inspelning.  
Se avsnittet "Nivåinställning".
  - \* Kassettdäckets Dolby NR-omkopplare i läge "o ut" ("off").

## SPECIFICATIONS

|                              |   |
|------------------------------|---|
| Dynamic Range:               | more than 110dB (at 1kHz, CrO <sub>2</sub> type tape) |
| Linearity:                   | 10dB or more improved (at 1kHz, tape)                 |
| Noise Level Improvement:     | more than 30dB (tape)                                 |
| Input Level:                 | 300mV (standard)<br>6V (max.)                         |
| Input Impedance:             | 36k $\Omega$  |
| Output Level:                | max. 5.5V, load impedance 22k $\Omega$                |
| Output Impedance:            | 2.5k $\Omega$   |
| Frequency Response:          | 40~20,000Hz $\pm$ 1dB                                 |
| Compression/Expansion Ratio: | 2:1, 1:2 (constant linear decibel)                    |
| Power Requirement:           | 110/125/220/240V, 50-60Hz                             |
| Power Consumption:           | 8W  |
| Dimensions (W×H×D):          | 43cm×5.3cm×28cm                                       |
| Weight:                      | 3.0kg   |

Specifications are subject to change without notice.



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